INSTRUCTIONS

TORQUE WRENCH APPLICATIONS

DESCRIPTION

To insure satisfactory performance of mechanical equipment and to avoid costly failures, it is important to tighten all nuts on vital bolts and studs according to values given in the appropriate instructions. When a torque wrench is not available, it may be assumed a man can exert a pull of about 125 pounds on a wrench handle which, when multiplied by the wrench length in feet, gives the torque produced in lb.-ft.

USE OF ADAPTERS

It is often necessary to use adapters with a torque wrench to reach inaccessible bolts or nuts. When adapters are used, the reading of the torque wrench dial is not the actual torque exerted. The additional torque exerted on the nut or bolt (over that shown on dial) depends on:

1. Length of the adapter
2. Angle at which adapter is positioned on wrench.

See Fig. 1 and 2 for calculation of correction factor to be applied to dial readings.

NOTE: *It is important the pull on the torque wrench handle be concentrated at the position marked "P" in Fig. 1 and 2. A shift in this position will cause considerable error in the effective torque at the end of the adapter. It is also very important the threads of both parts be clean, free of burrs, and properly lubricated. The contact face of a nut or bolt must also be lubricated with the same lubricant.*

FIG. 1, E-11813A

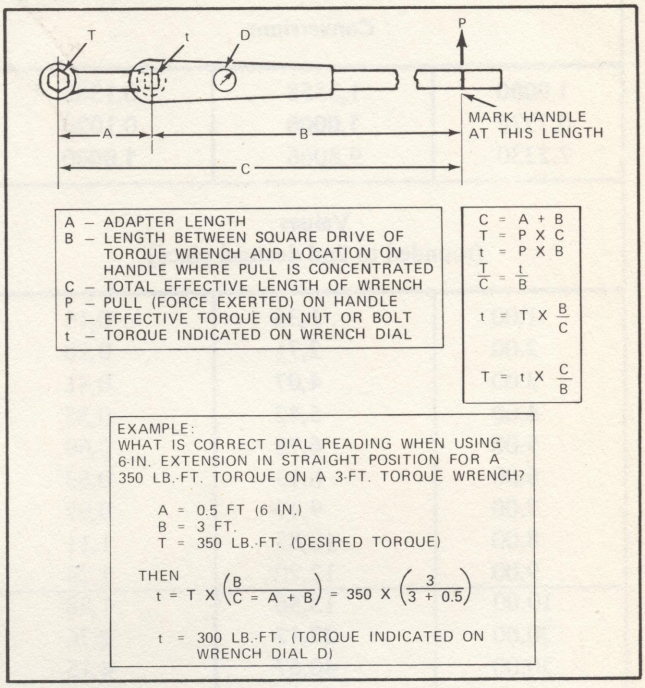
T
t
D
P
MARK HANDLE AT THIS LENGTH
A
B
C
A – ADAPTER LENGTH
B – LENGTH BETWEEN SQUARE DRIVE OF TORQUE WRENCH AND LOCATION ON HANDLE WHERE PULL IS CONCENTRATED
C – TOTAL EFFECTIVE LENGTH OF WRENCH
P – PULL (FORCE EXERTED) ON HANDLE
T – EFFECTIVE TORQUE ON NUT OR BOLT
t – TORQUE INDICATED ON WRENCH DIAL
C = A + B
T = P X C
t = P X B
T/C = t/B
t = T X B/C
T = t X C/B
EXAMPLE:
WHAT IS CORRECT DIAL READING WHEN USING 6-IN. EXTENSION IN STRAIGHT POSITION FOR A 350 LB.-FT. TORQUE ON A 3-FT. TORQUE WRENCH?
A = 0.5 FT (6 IN.)
B = 3 FT.
T = 350 LB.-FT. (DESIRED TORQUE)
THEN
t = T X (B / (C = A + B)) = 350 X (3 / (3 + 0.5))
t = 300 LB.-FT. (TORQUE INDICATED ON WRENCH DIAL D)

FIG. 1. USING TORQUE WRENCH WITH ADAPTER APPLIED IN STRAIGHT POSITION.

FIG. 2, E-11814A

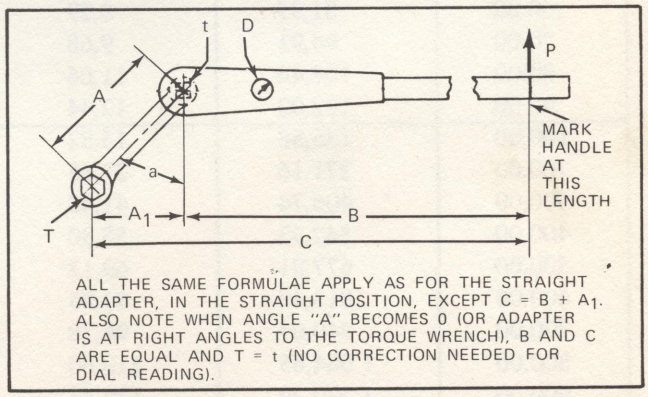
t
D
P
A
a
MARK HANDLE AT THIS LENGTH
T
A1
B
C
ALL THE SAME FORMULAE APPLY AS FOR THE STRAIGHT ADAPTER, IN THE STRAIGHT POSITION, EXCEPT C = B + A1. ALSO NOTE WHEN ANGLE "A" BECOMES 0 (OR ADAPTER IS AT RIGHT ANGLES TO THE TORQUE WRENCH), B AND C ARE EQUAL AND T = t (NO CORRECTION NEEDED FOR DIAL READING).

FIG. 2. TORQUE WRENCH WITH ADAPTER APPLIED AT AN ANGLE.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

Verify numbers for parts, tools, or material by using the Renewal Parts or Tool Catalogs, or contact your General Electric representative for assistance. Do not order from this publication.

TABLE I, ENGLISH TO METRIC CONVERSIONS

LB.-FT. (Pound-Feet)	N·m (Newton-Meters)	kgm or mkp (kilogram meters or kilopond meters)
Conversions		
1.0000	1,3558	0,1382
0.7376	**1,0000**	0,1020
7.2330	9,8066	**1,0000**
Values (rounded to 2nd decimal place)		
1.00	1,36	0,14
2.00	2,71	0,28
3.00	4,07	0,41
4.00	5,42	0,55
5.00	6,78	0,69
6.00	8,13	0,83
7.00	9,49	0,97
8.00	10,85	1,11
9.00	12,20	1,24
10.00	13,56	1,38
20.00	27,12	2,76
30.00	40,67	4,15
40.00	54,23	5,53
50.00	67,79	6,91
60.00	81,35	8,29
70.00	94,91	9,68
80.00	108,46	11,06
90.00	122,02	12,44
100.00	135,58	13,82
200.00	271,16	27,65
300.00	406,74	41,48
400.00	542,33	55,30
500.00	677,91	69,13
600.00	813,49	82,95
700.00	949,07	96,78
800.00	1 084,65	110,60
900.00	1 220,24	124,43
1000.00	1 355,82	138,25

EXAMPLE:

175 lb.-ft. = ? N·m
From Conversions:
175 X 1.3558 = 237,265 N·m ← ANSWER
From Table:

5 lb.-ft.	=	6,78 N·m
70 lb.-ft.	=	94,91 N·m
100 lb.-ft.	=	135,58 N·m
175 lb.-ft.	=	237,27 N·m ← ANSWER

NOTES:

TRANSPORTATION SYSTEMS BUSINESS DIVISION, GENERAL ELECTRIC COMPANY, ERIE, PA. 16531

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